



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,745	01/21/2004	Jeffrey P. Jones	2002B124-2	3637

23455 7590 10/11/2005

EXXONMOBIL CHEMICAL COMPANY  
5200 BAYWAY DRIVE  
P.O. BOX 2149  
BAYTOWN, TX 77522-2149

EXAMINER
----------

LEUNG, JENNIFER A

ART UNIT	PAPER NUMBER
----------	--------------

1764

DATE MAILED: 10/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/761,745

Applicant(s)

JONES ET AL.

Examiner

Jennifer A. Leung

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 59-103 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 59-103 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____.  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/13/04; 4/19/04; 1/21/04.</u>  | 6) <input type="checkbox"/> Other: ____.                                    |

## DETAILED ACTION

### *Specification*

1. The disclosure is objected because of the following informalities:

The cross-reference to related applications should be updated to read, --This application is a Divisional of U.S. application Serial Number 10/274,739, filed October 21, 2002 and now U.S. Patent Number 6,737,556, which is hereby incorporated by reference.--.

Application Serial number 09/506,843 should be updated by inserting, --now U.S. Patent Number 6,531,639,-- after “et al.,” on page 21, section [0054], line 10.

Appropriate correction is required.

### *Claim Objections*

2. Claims 59, 61, 95, 102 and 103 are objected to because of the following informalities:

In claim 59, line 1: “an MTO” should be changed to --a methanol to olefin (MTO)--, to define the stated acronym.

In claim 61, line 2: “an alloy” to --a commercial alloy--, to identify the source of the alloy numbers stated.

In claim 95, line 2: “an alloy” to --a commercial alloy--, to identify the source of the alloy numbers stated.

In claim 102, line 2: “an alloy” to --a commercial alloy--, to identify the source of the alloy numbers stated.

In claim 103, line 2: “an alloy” to --a commercial alloy--, to identify the source of the alloy numbers stated.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 59-103 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 59, it is unclear as to the structural relationship between “an inner surface forming a conduit”, in line 5, and the “first generally tubular member”, set forth in line 3. Also, the “formation of metal catalyzed side reaction byproducts” (line 8) lacks proper positive antecedent basis, and it is unclear as to what products comprise these byproducts, as well as how these byproducts originated.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 97 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the first material comprising the various claimed commercial alloys and alloy compositions, does not reasonably provide enablement for the first material comprising all other materials that are in existence, other than carbon steel, that exhibit the property of resistance to the formation of metal catalyzed side reaction byproducts. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with this claim.

*Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 59-61, 66-69, 72-75, 98-101 and 103 are rejected under 35 U.S.C. 102(b) as being anticipated by Tiller et al. (US 5,588,974).

Regarding claims 59-61 and 103, Tiller et al. (FIG. 1, 2) discloses an apparatus comprising a feed introduction nozzle including a first generally tubular member (i.e. tubular metal body **21**) having a first end (e.g., for a feed **13**), a second end adjacent a reactor unit (i.e., a reactor **10** containing fluidized bed **11**) and an inner surface (i.e., as defined by the wall of tubular member **21**) forming a conduit for delivering feedstock **13** from the first end to the second end, wherein at least a portion of the inner surface **21** is formed of a first material comprising a nickel-chromium-iron alloy generally of the 600 alloy series, including Alloy 600, 690, and the like, and preferably INCONEL 600 (column 5, line 66 to column 6, line 21), said material being inherently resistant to the formation of metal catalyst side reaction byproducts, as defined in Applicant's disclosure.

Regarding claims 66-69, said first material (i.e., forming tubular member **21**) preferably comprises at least 70 weight percent nickel, and more preferably 70-80 weight percent nickel. (column 6, lines 5-13).

Regarding claims 72-75, said first material (i.e., forming tubular member **21**) preferably comprises between 5-12 weight percent iron, and more preferably 6-10 weight percent iron

Art Unit: 1764

(column 6, lines 5-13).

Regarding claim 98, the nozzle **21** (FIG. 5; column 6, lines 41-50) may be jacketed with a cooling system (i.e., a steam jacket **43** with upper and lower channels **43<sub>1</sub>**, **43<sub>2</sub>**).

Regarding claims 99-101, the nozzle **21** (FIG. 1, 2) may be jacketed with a thermally insulating material **25**, said material comprising a refractory material that covers at least a portion of an interior portion of the nozzle **21** which extends inside the reactor **10** (i.e., beginning at the point at which tube **21** extends beyond refractory **26**).

Instant claims 59-61, 66-69, 72-75, 98-101 and 103 structurally read on the apparatus of Tiller et al.

6. Claims 59, 60, 62, 66-68, 72-75, 98 and 102 are rejected under 35 U.S.C. 102(b) as being anticipated by Chowdhury (EP 0 135 144) in view of Haynes International (Product Specification for Hastelloy C-276 Alloy) and Carpenter Technologies (Product Specification for 20Cb-3 Stainless).

Regarding claims 59, 60 and 102, Chowdhury (FIG. 1, 2) discloses an apparatus comprising a feed introduction nozzle including a first generally tubular member (i.e., inner pipe **5**, FIG. 1; or inner pipe **13**, FIG. 2) having a first end (i.e., for continuous inflow **8**), a second end (i.e., discharge end **7**, FIG. 1; or discharge end **14**, FIG. 2) adjacent a reactor unit (i.e., defined by reactor vessel wall **2**), and an inner surface (i.e., as defined by the wall of inner pipe **5** or **13**) forming a conduit for delivering feedstock **8** from the first end to the second end **7** or **14**, wherein at least a portion of the inner surface **5** or **13** is formed of a first material comprising, for example, Carpenter 20-Cb3 or Hastelloy C-276 (page 7, lines 8-14; Example, page 8), said material being inherently resistant to the formation of metal catalyzed side reaction byproducts,

Art Unit: 1764

as defined in Applicant's disclosure.

Regarding claim 62, Carpenter 20Cb-3 Stainless comprises about 19.00 to 21.00 weight percent chromium (see Product Specification for 20Cb-3 Stainless, page 1).

Regarding claims 66-68, Hastelloy C-276 Alloy comprises about 57 weight percent nickel (see Product Specification for Hastelloy C-276 Alloy, page 3; claims 66-68). Also, Carpenter 20Cb-3 Stainless comprises about 32.50 to 35.00 weight percent nickel (see Product Specification for 20Cb-3 Stainless, page 1; claims 66 and 67).

Regarding claims 72-75, Hastelloy C-276 Alloy comprises about 5 weight percent iron (see Product Specification for Hastelloy C-276 Alloy, page 3; claims 72-75). Also, Carpenter 20Cb-3 Stainless may comprise about 32 weight percent iron (see Product Specification for 20Cb-3 Stainless, page 1; taking the maximum weight percent of all other metals and the balance iron; claims 72 and 73).

Regarding claim 98, nozzle 5 or 13 is jacketed with a cooling system (i.e., outer pipe 1, with coolant 10, in FIG. 1; or outer pipe 11, with coolant 10, in FIG. 2; page 6, lines 12-22).

Instant claims 59, 60, 62, 66-68, 72-75, 98 and 102 structurally read on the apparatus of Chowdhury.

7. Claims 59, 60 and 98-101 are rejected under 35 U.S.C. 102(b) as being anticipated by Chowdhury et al. (US 4,461,743).

Regarding claims 59 and 60, Chowdhury (FIG. 1) discloses an apparatus comprising: a feed introduction nozzle including a first generally tubular member (i.e., nozzle pipe 2) having a first end (→), a second end (i.e., discharge end 7) adjacent a reactor unit (i.e., a reactor 1), and an inner surface (i.e., as defined by the wall of the nozzle pipe 2) forming a conduit for

Art Unit: 1764

delivering feedstock from the first end to the second end 7, wherein at least a portion of the inner surface is formed of a first material comprising stainless steels, Hastelloy® alloys, and various nickel based alloys (column 5, lines 12-13), said materials being inherently resistant to the formation of metal catalyzed side reaction byproducts, as defined in Applicant's disclosure.

Regarding claim 98, the nozzle 2 may be jacketed with a cooling system (i.e., FIG. 4: the nozzle pipe, now labeled as pipe 20, comprising a jacket defined by a second pipe 21 for containing a cooling fluid flowing from inlet 24 to outlet 25; or FIG. 5: the nozzle pipe, now labeled as pipe 29, comprising jacket defined by a second pipe 30 for containing a cooling fluid flowing from inlet 33 to the reactor, see FIG. 5).

Regarding claims 99-101, the nozzle 2 (FIG. 1) may be jacketed with a thermally insulating material (i.e., a second pipe 4, defining an annular space 5 which may be filled with a solid such as calcium silicate; column 3, lines 22-31), wherein the thermally insulating material covers at least a portion of an interior portion of the nozzle 5 extending inside said reactor 1 (i.e., the portion beyond plate 6).

Instant claims 59, 60 and 98-101 structurally read on the apparatus of Chowdhury et al.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various



Art Unit: 1764

claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claim 102 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tiller et al. (US 5,588,974).

Tiller et al. discloses that the nozzle **21** preferably comprises an alloy such Inconel 600 or other nickel based alloys of the 600 series (column 5, line 66 to column 6, line 21). Thus, it would have been obvious an obvious design choice for one of ordinary skill in the art at the time the invention was made select another alloy of the 600 series, such as Alloy 601 or 625, for the material of the nozzle **21** in the apparatus of Tiller et al.

9. Claims 61 and 95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chowdhury et al. (US 4,461,743) in view of Myers et al. (US 3,574,601).

Chowdhury et al. discloses that typical materials for the nozzle are, "stainless steels, Hastelloy® alloys, and various nickel based alloys." (column 5, lines 11-14). Although Chowdhury et al. does not state the specific compositions for the alloys, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select a known, suitable composition for the material of the nozzle (such as one of the instantly claimed compositions) in the apparatus of Chowdhury et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof. It is further noted that the instantly claimed alloy compositions are conventionally known in the art, as evidenced by Myers et al. In particular, Myers et al. (column 1, lines 22-44) evidences the use of alloys including

Art Unit: 1764

A.I.S.I. 300 and 400 series alloys (e.g., 304, 316, 410) for forming structural components in the chemical and petroleum industries is conventionally known.

10. Claims 66-76 and 92-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chowdhury et al. (US 4,461,743) in view of Bieber et al. (US 2,234,955).

Chowdhury et al. discloses that typical materials for the nozzle are, “stainless steels, Hastelloy® alloys, and various nickel based alloys.” (column 5, lines 11-14). Although Chowdhury et al. does not state the specific compositions for the steels or alloys, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select a suitable composition for the material of the nozzle (such as one of the instantly claimed compositions) in the apparatus of Chowdhury et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof. It is further noted that the instantly claimed compositions for the metal alloy are conventionally known in the art, as evidenced by Bieber et al. In particular, Bieber et al. (column 1, line 30 to column 2, line 57) teaches a nickel based alloy, suitable for use in high temperature and corrosive environment and suitable for the construction of nozzles (page 6, column 1, lines 38-55), said alloy comprising about 50-85 weight percent nickel (claims 66-69), about 2-4 weight percent aluminum (claims 70 and 71), about 0.05 to 10 weight percent iron (claims 72-76), and about 10-45 weight percent copper (claims 92-94).

11. Claims 62-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chowdhury et al. (US 4,461,743) in view of Grant et al. (US 3,015,558).

Chowdhury et al. discloses that typical materials for the nozzle are, “stainless steels, Hastelloy® alloys, and various nickel based alloys.” (column 5, lines 11-14). Although

Art Unit: 1764

Chowdhury et al. does not state the specific compositions for the alloys, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select a suitable composition for the material of the nozzle (such as one of the instantly claimed compositions) in the apparatus of Chowdhury et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof. It is further noted that the instantly claimed alloy compositions are conventionally known in the art, as evidenced by Grant et al. In particular, Grant et al. teaches a nickel based alloy, capable of withstanding working stresses, corrosive oxidizing atmospheres and the like at elevated temperatures ranging up to 1800 °F (column 1, lines 10-60), said alloy (column 2, lines 24-36) comprising, preferably, about 30 to 40 weight percent chromium (claims 62-65); about 2 to 5 weight percent aluminum (claims 70 and 71); the balance substantially nickel, with the sum of the nickel and chromium content being at least about 80% at a ratio of nickel to chromium of at least about 1.3 to 1 (claims 66-69); and optionally up to about 5 weight percent iron (claims 72-76).

12. Claims 77-79, 82-87 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tiller et al. (US 5,588,974) OR Chowdhury (EP 0 135 144) OR Chowdhury et al. (US 4,461,743) in view of Singheiser (US 4,909,984).

Each of the references to Tiller et al., Chowdhury, and Chowdhury et al. are silent as to the provision of an inner coating layer on the inner surface of the nozzle. Singheiser et al. teaches a protective coating for slowing or completely stopping the effects of high temperature corrosion, caused especially by sulfur, oil residue, oxygen, alkaline earths and vanadium (column 1, line 8 to column 2, line 15), said coating being formed by a material (column 2, lines 7-14) comprising about 18 to 27 weight percent chromium (claims 78 and 79); about 8 to 12 weight

Art Unit: 1764

percent aluminum (claims 86 and 87); and about 37 to 67.5 weight percent nickel (i.e., taking the balance nickel; claims 82-85). It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the coating layer as taught by Singheiser et al. as an inner coating layer on the inner surface of the nozzle in the apparatus of Tiller et al., Chowdhury, OR Chowdhury et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the coating layer provides a high temperature protective coating having a low oxidation rate which is corrosion resistant and additionally can be adapted to the basic materials of structural elements even at high temperatures, as taught by Singheiser et al. (column 1, lines 62-66).

13. Claims 77-85 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tiller et al. (US 5,588,974) OR Chowdhury (EP 0 135 144) OR Chowdhury et al. (US 4,461,743) in view of Smeggil (US 4,826,738).

Each of the references to Tiller et al., Chowdhury, and Chowdhury et al. are silent as to an inner coating layer on the inner surface of the nozzle. Smeggil teaches a protective coating with improved resistance to oxidation and hot corrosion degradation (abstract), said coating being formed of a material comprising about 50 to 90 weight percent nickel and about 10 to 50 weight percent chromium (see reference claim 3). It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the coating layer as taught by Smeggil as an inner coating layer on the inner surface of the nozzle in the apparatus of Tiller et al., Chowdhury, OR Chowdhury et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the coating layer provides improved resistance of the base element to oxidation and hot corrosion degradation, as taught by Smeggil.

Art Unit: 1764

14. Claims 77, 82-91, 96 and 97 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tiller et al. (US 5,588,974) OR Chowdhury (EP 0 135 144) OR Chowdhury et al. (US 4,461,743) in view of Nicoll (US 4,500,458). 489

Each of the references to Tiller et al., Chowdhury, and Chowdhury et al. are silent as to an inner coating layer on the inner surface of the nozzle. Nicoll teaches a protective coating for protecting steel elements exposed to high temperatures and in the presence of corrosive agents, said coating (column 2, lines 11-23) being formed by a material comprising about 4 to 5.1 weight percent aluminum (claims 86 and 87), about 4.5 weight percent iron (claims 88-91 and 96), and about 65.9 to 69.7 weight percent nickel (i.e., the remaining part of the alloy as nickel; claims 82-85). It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the coating layer as taught by Nicoll as an inner coating layer on the inner surface of the nozzle in the apparatus of Tiller et al., Chowdhury, OR Chowdhury et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, because the coating helps protect steel elements from exposure to high temperatures in the presence of corrosive agents, as taught by Nicoll (column 1, line 5 to column 2, line 6).


### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1764

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer A. Leung  
October 3, 2005 

  
**HIEN TRAN**  
**PRIMARY EXAMINER**